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MONEY AND EDUCATION

A GUIDE TO MISSOURI SCHOOL FINANCE

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MONEY AND EDUCATION

A GUIDE TO MISSOURI SCHOOL FINANCE

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FOREWORD

This publication is the result of a National Institute of Education grant to the American Federation of Teachers.

A "Guide to Missouri School Finance" is one of a series of handbooks prepared for use at workshops designed to assist teachers, administrators, legislators and other interested parties in understanding and dealing with the intricacies of school finance equalization plans in their states. In the past, these issues have been debated in relative isolation by a handful of experts.

States were selected for analysis either because they are currently undergoing significant changes in their education finance systems or because current within state disparities suggest that the development of new finance legislation is a topic of growing concern. Workshops have been conducted in California, Connecticut, Florida, Illinois, Michigan, Missouri, Ohio, New York, Pennsylvania, Rhode Island and Texas.

It is our hope that through the dissemination of these handbooks, to a wider audience, people representing diverse points of view will be able to effectively take part in the debates and decisions affecting the financing of our nation's schools.

Lauren Weisberg
Project Officer

Educational Finance
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ACKNOWLEDGMENTS

The AFT Project on Teachers and School Finance Reform is the product of the foresight of AFT leadership, and a grant from the National Institute of Education, Department of Education. Recent events--court challenges to school finance plans, declining enrollments, rising education costs spurred by inflation and increased mandatory programming, and shrinking revenues resulting from tax limitation initiatives--have made school finance a critical educational issue affecting every teacher, every parent and every child in the nation's public schools. Each year, state and local governments spend billions of dollars on education. Yet, the decisions regarding how educational revenues are to be raised and more importantly how revenues are to be distributed among schools have been left to the few legislators, administrators, and policymakers who understand the complexities of school finance.

The American Federation of Teachers has long been a leader at the national, state and local levels in the struggle for more money for our public schools. The AFT recognizes that to be successful in maintaining quality public education requires the informed participation of teachers, administrators, parents and the general public in key policy decision-making.

The manual on Missouri School Finance represents one of many initiatives by the American Federation of Teachers to provide its members and other public interest leaders with the basic knowledge and skills to deal effectively with the issues surrounding the financing of our public schools. The authors hope you will use this manual as a guide to understanding the Missouri school finance plan and as a resource for exploring future policy issues in Missouri school finance.

The authors gratefully acknowledge the invaluable assistance of Helen Nemorin of the AFT Economic Research staff for typing the manuscript and preparing it for publication and the imaginative talents of Charles Glendinning for the cover design.

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CHAPTER I

INTRODUCTION

School finance is the most basic educational issue, for without proper financing our system of public education cannot survive. Under the American federal system, the responsibility of providing for elementary and secondary education is reserved for the states. Traditionally, most states have delegated the largest part of this responsibility to local government units, leaving them also with the largest share of financial responsiblity for public schools. Since the nineteenth century, local property taxes have served as the major source of revenue for public education. Unequal abilities to support public services and different ideas on what constitutes appropriate local tax effort and spending levels have created wide disparities in educational expenditures per pupil among local school districts in almost all states. It is the existence of these wide disparities in educational expenditures which has been the prime factor behind the recent school finance reform movement.

The school finance reform movement marked its beginning with the landmark case of Serrano vs. Priest in California in the early 1970's. The California Supreme Court ruled that the state's public school financing system "with its substantial dependence on local property taxes and resultant wide disparities in school revenue"[1] was in violation of the equal protection clause of both the California state constitution and the Fourteenth Amendment of the U.S. Constitution. Central to the Court's decision was its finding that equal educational opportunity was being denied the young people of California because under the state's school finance plan the quality of a child's education, as evidenced by per pupil expenditures, was directly dependent upon the wealth of the child's parents and neighbors. Furthermore, the state's distribution of aid to districts on a uniform per pupil basis, regardless of district wealth, only exacerbated the existing disparities in school district educational offerings. The court also found that taxpayers in poor districts could not "freely choose to tax (themselves) into an excellence" which their tax rolls could not provide.[2] In its ruling, the court raised two fundamental issues: educational expenditure equity and tax burden equity. However, the overriding

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[1] Serrano vs. Priest, 96 Col. Rptr. 601, 487 p. 2d 1241 (1971)

[2] Serrano vs. Priest

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concern of the court lay with achieving greater equity among school districts in spending for education.

Shortly after the original Serrano case (1971), a federal District Court in Texas found the Texas' system of school finance to be unconstitutional under the Fourteenth Amendment. On appeal, the Rodriguez vs. San Antonio case was heard by the U.S. Supreme Court. In 1973, the Supreme Court reversed the lower court's decision, finding that 1) education was not a fundamental interest afforded protection under the Federal Constitution (Fourteenth Amendment) and 2) there was no suspect classification of poor against whom discrimination had been practiced. The court maintained that the Texas school finance plan was structured so as to preserve local autonomy over education and not to promote wealth discrimination. Paramount to the Court's decision was a fear that a national mandate to reform state school finance laws would cause too great a shift in the traditional distribution of powers among state and federal governments in the field of education.[3]

The impact of the Rodriguez decision was to effectively close the federal courts to any consideration of school finance reform. At the time of the decision, many reformers felt that the weight of such an opinion from the U.S. Supreme Court would negatively influence state courts. Fortunately, the Serrano case remained unaffected by the U.S. Supreme Court's decision since it also was based on an interpretation of the state constitution's equal protection clause. Despite the Rodriguez decision, litigation based on state constitutional grounds did continue in various states.

Within a matter of weeks after the Rodriguez decision, the New Jersey Supreme Court ruled in Robinson vs. Cahill that New Jersey's plan for public school financing violated that state's constitution because the plan failed to provide for a "thorough and efficient system of free public schools." The court stated that the obligation to provide for a "thorough and efficient system" of education was clearly the state's, and that regardless of the reason, "if the local government cannot carry the burden, the state must itself meet its continuing obligation."[4] It is interesting to note in this case that the

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[3]John Jennings, "School Finance Reform: The Challenge Facing Connecticut," Journal of Education Finance, Vol. 4, No. 4, p. 397.

[4]Robinson vs. Cahill, 62NJ 473, 303 A. 2d 273 (1973)

New Jersey Supreme Court clearly accepted educational expenditure levels as a measure of the quality of educational opportunity being provided in school districts.

The Horton vs. Meskill case followed in 1977. The Connecticut school finance plan was ruled unconstitutional by the Connecticut Supreme Court on grounds that it violated both an education rights clause and the equal protection clause of the state constitution. The court maintained that since it was the state's constitutional responsibility to "provide a substantially equal educational opportunity" for its youth, a system of school finance which relied primarily on local funding and yet provided no significant state equalizing aid was unconstitutional. The court further found that since public education was a fundamental right under the state constitution's equal protection provision, any infringement of that right must be strictly scrutinized. Unlike the U.S. Supreme Court's finding in Rodriguez, the Connecticut Supreme Court held that local control of education was not a "compelling state interest" justifying different treatment for education among districts.

In Cincinnati vs. Walter, an Ohio Supreme Court ruled (1979) that Ohio's school finance plan was constitutional, overturning the decision of two lower courts which ruled in 1977 and in 1978 that Ohio's equal yield formula was unconstitutional. The lower courts held that Ohio's school finance plan, which distributed state aid according to local tax effort, violated the state's "thorough and efficient" education clause since local effort, or the inclination of taxpayers to support property tax initiatives, was not necessarily a reflection of voter preference for education but rather an indicator of the socioeconomic class or wealth of the district. Furthermore, the differences in district expenditures per pupil and resultant variations in educational quality attributed to the school finance plan, violated the state constitution's equal protection clause.

In its finding, the Ohio Supreme Court said the state's plan was constitutional because local control of education "provides a rational basis for supporting the disparity in per pupil expenditures." Additionally, the present financing system meets the condition for a "thorough and efficient" education because "no part or any number" of the school districts in the state are starved for funds or lack of teachers, building or equipment. "The fact that a better financing system could be devised which would be more efficient or

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more thorough is not material," the court said. The case is now being appealed by the plaintiffs to the U.S. Supreme Court.

In the 1978 New York case, Levittown vs. Nyquist, the New York school finance plan was declared unconstitutional. In its findings, the court adopted the concepts, of "municipal overburden" and "educational overburden." In recognizing the role of municipal overburden, the court required that the greater burden placed on city taxes to provide revenues for widespread social services must be taken into account in apportioning state funds for public education. Similarly, the court recognized that certain school districts, particularly large urban districts, are overly burdened with high educational need children such as handicapped, disadvantaged, and limited English speaking children. This fact coupled with the higher cost of purchasing educational services in the cities leads to the limited ability of some districts to meet the demand for educational services.

Since Serrano vs. Priest, more than thirty school finance cases have been filed in state and federal courts.[5] Some of the most significant cases have been presented here as a brief overview of the judicial history of the reform movement. While the turmoil of school finance reform may not reach directly into the classroom, the impact of the movement will have an effect on the funds available for the education of each and every child. For this reason it is imperative that teachers, other school professionals, and those concerned about public education become knowledgeable about school finance issues and actively engage in policy debates.

The purpose of this manual is to provide an overview of the way public elementary and secondary schools are financed in Missouri, place school finance in the context of government finances, and explore some of the school finance policy issues and options. Chapter II of this manual looks at state and local government fiscal structures in Missouri with emphasis on fiscal performance and effort. This chapter is offered as background information for the larger discussion of school finance strategies, for without an understanding of local and state financial capacities, meaningful and well integrated reform measures cannot be conceived. Chapter III explains the current Missouri state school

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[5] Jay Moskowitz and Joel Sherman, "School Finance Litigation: The Use of Data Analysis," Journal of Education Finance, 1979. Vol, 4, No. 4, p. 322.

financing plan with emphasis on how state aid to school districts is distributed. Lastly, Chapter IV provides an introduction to the issues surrounding school finance reform by examining statewide disparities in school district educational expenditures, wealth, and tax rates. Some commentary is offered on the effects of these disparities and their relationship to state financing formulas.

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CHAPTER II
MISSOURI STATE AND LOCAL FISCAL STRUCTURE

The financing of public elementary and secondary schools cannot be considered outside of the context of general state and local government finance. In fact, in 1976-77 in the United States, 41.7 percent of all state and local government expenditures were for local elementary and secondary schools. For Missouri, the proportion was only slightly less at 41.3 percent. In terms of resources required, local schooling is the major function of state and local governments. It is appropriate, then, to consider the environment of the state and local government fiscal structure, as well as the economic base, before taking a detailed look at school finance.

Missouri is a major midwestern state with a population of 3.8 million, an increase of a half million people since 1960. Over 55 percent of Missouri's people live in the two major metropolitan areas of St. Louis and Kansas City. Smaller metropolitan areas exist around Springfield, St. Joseph, and Columbia. All together, 63.6 percent of the population of Missouri is in metropolitan areas.

In 1976, Missouri had a per capita personal income of approximately $6,000, or 7 percent below the national average. In per capita personal income, Missouri ranked 29th in the nation in 1976, while it had ranked 23rd in 1970 and 24th in 1960.

Missouri's employment profile shows that the state's labor force is employed as follows: white collar, 47 percent; blue collar, 36 percent; service, 13 percent; and farm, 4 percent.

Major economic activity in the state is concentrated in the following areas:

1. Agriculture
2. Finance, insurance, and real estate
3. Transportation equipment
4. Food products
5. Printing and publishing
6. Apparel and textile products

These provide Missouri with a fairly diversified economy.

In 1977, there were 2,953 local governmental units in Missouri. These local governments included 114 counties, 916 municipalities, 326 townships, 1,021 special districts, and 575 school districts.

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State Government Finances

State government in Missouri was a $2.5 billion enterprise in 1976-77. As shown in Tables 1 and 2, the state of Missouri spent approximately $2.5 billion in general revenues. The discrepancy between the figures for total general expenditures and total general revenues in the two tables represents net transfer payments to social insurance funds and net changes in general debt.

Table 1 shows the major expenditure categories for the state of Missouri with per capita amounts and the percentage distribution of expenditures shown.

Between state aid to local schools and direct state expenditures for education (primarily public higher education and the operation of the state education department), 41.6 percent of all state general expenditures go for educational purposes. The next most important function(s) of the state government are public welfare and highways which combine to take another 33.7 percent of state expenditures. These three functions account for three-quarters of all general state spending.

Note that total education expenditures by the state come to over $210 per person in Missouri.

It is important to note where the state revenues came from to pay for these public services. Table 2 shows general revenue for 1976-77 for the state of Missouri.

The four largest sources of revenue were federal aid (30.0 percent), the general sales tax (22.7 percent), the individual income tax (14.8 percent), and selective sales taxes (12.6 percent). License taxes, the corporation income tax, and current charges also provided significant amounts of state revenue.

Local Government Finances

Local governments in Missouri collectively spent even more in 1976-77 than did the state government ($2.8 billion vs. $2.5 billion). The largest single item of local government expenditures was local elementary and secondary schools which accounted for 47.7 percent of all local spending.

Following local schools were health and hospitals (7.7 percent), police protection (5.7 percent), highways (5.6 percent), and sanitation and sewerage (5.5 percent). Note in Table 3 that 87 percent of all local spending was for current operations, while 13 percent was for capital outlay (primarily construction of new facilities and purchase of equipment).

Table 4 shows how local governments raised these monies. The four largest

TABLE 1

STATE GOVERNMENT EXPENDITURES
STATE OF MISSOURI
1976-77

	Amount (thousands of dollars)	Per Capita Amount	Percentage Distribution
General Expenditures	$2,466,856	$513	100.0%
Intergovernmental Expenditures	726,028	151	29.4
for Education	601,856	125	24.4
for Highways	46,560	10	1.9
Direct General Expenditures	1,740,828	362	70.6
Education	424,601	88	17.2
Public Welfare	435,297	91	17.6
Highways	351,053	73	14.2
Hospitals	162,779	34	6.6
Natural Resources	57,912	12	2.3
Health	43,586	9	1.8
Correction	35,048	7	1.4
Other	230,552	48	9.3

TABLE 2

STATE GOVERNMENT REVENUES
STATE OF MISSOURI
1976-77

	Amount (thousands of dollars)	Per Capita Amount	Percentage Distribution
Total General Revenue	$2,632,790	$548	100.0%
Federal Revenue	789,064	164	30.0
Local Revenue	3,568	1	0.1
General Sales Tax	596,434	124	22.7
Selective Sales Taxes	332,979	69	12.6
License Taxes	149,108	31	5.7
Individual Income Tax	389,594	81	14.8
Corporation Income Tax	105,772	22	4.0
Other Taxes	24,207	5	0.9
Total Charges	186,931	39	7.1
Miscellaneous General Revenues	55,133	11	2.1

Source: AFT Department of Research calculations from U.S. Bureau of the Census, State Government Finances in 1977 (Series GF77 No.3)

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TABLE 3

LOCAL GOVERNMENT EXPENDITURES
ALL MISSOURI LOCAL GOVERNMENTS
1976-77

	Amount (thousands of dollars)	Per Capita Amount	Percentage Distribution
Direct General Expenditures	$2,782,700	$580	100.0%
Current Operations	2,413,400	502	86.7
Capital Outlay	369,300	77	13.3
Local Schools	1,328,500	277	47.7
Higher Education	81,500	17	2.9
Highways	157,100	33	5.6
Public Welfare	14,000	3	0.5
Health & Hospitals	213,500	44	7.7
Police Protection	159,000	33	5.7
Fire Protection	71,200	15	2.6
Local Parks & Recreation	80,400	17	2.9
Sanitation & Sewerage	153,200	32	5.5
General Government	100,400	21	3.6
Interest	103,400	22	3.7
All Other	320,600	67	11.5

TABLE 4

LOCAL GOVERNMENT REVENUES
ALL MISSOURI LOCAL GOVERNMENTS
1976-77

	Amount (thousands of dollars)	Per Capita Amount	Percentage Distribution
Total General Revenue	$2,954,500	$615	100.0%
from Federal government	377,700	79	12.8
from State government	713,400	148	24.1
from Own Sources	1,863,400	388	63.1
Property taxes	922,600	192	31.2
General sales taxes	131,800	27	4.5
Other taxes	271,000	56	9.2
Charges & Misc. Revenues	538,000	112	18.2

Source: AFT Department of Research calculations from U.S. Bureau of the Census, Governmental Finances in 1976-77 (Series GF77 No.5)

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local revenue sources were the local property tax (31.2 percent), state aid (24.1 percent), charges and miscellaneous revenues (18.2 percent), and federal aid to localities which is provided through the state government and counted here as state aid.

The noteworthy feature of Missouri's local government revenue structure is the heavy reliance on the local property tax.

State and Local Fiscal Effort

Table 5 relates selected items of Missouri state and local revenues and expenditures to state personal income and shows a comparison with the U.S. average and the corresponding data for surrounding states.

The value of relating revenue and expenditure data to personal income is that it corrects for differing income levels among states.

In both general revenues and general expenditures per $1000 of personal income, Missouri falls below the national average and performs poorly compared to its neighbors.

While the expenditure per $1000 of personal income for local schools in Missouri does slightly exceed that of neighboring Illinois, it is almost 10 percent below the national level, as well as below other neighboring states.

Table 6 shows the proportion of Missouri's personal income going to schools over a multi-year period. Since 1971-72, the share of income spent on schools has been steadily declining, with Missouri ranking 32nd in the U.S. in 1971-72 and 44th in 1977-78. Quite simply, spending for schools in Missouri has not kept pace with gains in income.

Another way of measuring tax effort is the representative tax system approach. Here a national average tax rate for a particular tax is applied to a state's tax base. The resulting yield, compared with acutal yields using the state's actual tax rate, provides a comparative tax effort index. An index of less than 100 shows underuse of a tax and an index of over 100 shows an overuse.

Table 7 shows the comparative tax effort index for major state and local taxes in Missouri in 1975.

In that year, Missouri had an above average tax effort for selective sales taxes on public utilities and all licenses. Missouri underused all other taxes, with significant underuse of the alcoholic beverage sales tax, the corporation net income tax, death and gift taxes, and severance taxes.

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TABLE 5

RELATION OF STATE AND LOCAL GOVERNMENT
FINANCIAL ITEMS TO STATE PERSONAL INCOME
MISSOURI AND SELECTED STATES
1976-77

	Missouri	Illinois	Iowa	Kansas	U.S.
General Revenue Per $1000 of Personal Income					
Total	$ 171	$ 174	$ 199	$ 186	$ 208
Federal Sources	41	34	40	37	46
All State & Local Sources	130	140	159	149	163
Taxes	103	117	120	113	128
Property Taxes	33	43	47	47	46
General Expenditure Per $1000 of Personal Income					
Total	159	173	198	186	199
Local Schools	47	46	56	49	52
Other Education	18	19	28	25	23
Exhibit: Personal Income Per Capita, 1976	5963	7347	6245	6470	6399

SOURCE: U.S. Bureau of the Census, Governmental Finances in 1976-77 (Series GF77 No.5)

TABLE 6

STATE AND LOCAL REVENUES FOR SCHOOLS
AS A PERCENT OF TOTAL PERSONAL INCOME
MISSOURI
1971-72 to 1977-78

	PERCENT	RANK AMONG 50 STATES
1971-72	4.8	32
1972-73	4.6	38
1973-74	4.8	31
1974-75	4.5	33
1975-76	4.4	38
1976-77	4.2	42
1977-78	3.8	44

SOURCE: Advisory Commission on Intergovernmental Relations, Significant Features of Fiscal Federalism, 1978-79 Edition.

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TABLE 7

MISSOURI STATE AND LOCAL TAX EFFORT
AS MEASURED BY THE REPRESENTATIVE TAX SYSTEM
1975

TYPE OF TAX	TAX EFFORT[1]
All Taxes	85
General Sales Tax	83
Selective Sales Taxes	91
Motor Fuels	85
Alcohol Beverages	59
Tobacco Products	94
Insurance	86
Public Utilities	137
Licenses	104
Individual Income Tax	87
Corporation Income Tax	51
Total Property Taxes	86
Residential	85
Commercial & Industrial	88
Farm	78
Public Utilities	93
Death & Gift Taxes	55
Severance Taxes	0

[1] Tax Effort Index = $\frac{\text{State's Tax Rate} \times \text{State's Tax Base}}{\text{Nat. Av. Tax Rate} \times \text{State's Tax Base}}$

SOURCE: D. Kent Halstead, Tax Wealth in Fifty States (Washington: The National Institute of Education, 1978)

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CHAPTER III

STATE SUPPORT FOR PUBLIC ELEMENTARY AND SECONDARY EDUCATION

Public Education in Missouri

In 1977-78, the Missouri public school system educated 1,008,186 pupils. Like many states across the country, this enrollment figure represents a decline over the previous year's enrollment. Table 8 shows Missouri's enrollment trend compared with the national trend for the past five years. Since 1973-74, Missouri schools have seen an average decline of 1.5 percent per year compared to a national average decline of 0.9 percent per year.

TABLE 8

PUBLIC SCHOOL ENROLLMENTS
1973-74 to 1977-78

Year	Missouri Enrollment	Percent Decline Over Previous Year	National Enrollment	Percent Decline Over Previous Year
1973-74	1,069,940		45,429,000	
1974-75	1,053,879	1.5	45,053000	0.9
1975-76	1,042,881	1.0	44,791,000	0.5
1976-77	1,026,999	1.5	44,335,000	1.0
1977-78	1,008,186	1.8	43,731,000	1.3

Prepared by: AFT Research Department calculations with data from The 1979 Condition of Education, National Center for Education Statistics, Department of Health, Education and Welfare; and Selected Education Statistics for Missouri, Fall, 1978, Missouri Department of Elementary and Secondary Education.

In Missouri, there are 557 school districts charged with educating the state's children. These districts represent a wide range of sizes, property wealth and character. The largest districts, St. Louis and Kansas City, educate 69,570 pupils and 43,825 pupils respectively.[1] Equalized property

[1] Report of the Public Schools, School Year Ending June 30, 1978; Missouri State Board of Education.

wealth of school districts varies from a high of $90,119 per eligible pupil to a low of $6,188 per eligible pupil. Some Missouri districts are highly urbanized; others are totally rural in character. These differences among districts in size, wealth, and character result in different educational needs, different educational demands, and differing abilities to pay for educational services.

Funds for Missouri public elementary and secondary education come from three sources: local revenues, state aid, and federal aid. In 1977-78, revenues available for current educational expenditures totaled $1,196,236,496. Table 9 shows the breakdown of revenues by source.

TABLE 9

REVENUES FOR CURRENT EDUCATIONAL EXPENDITURES FOR 1977-78 BY SOURCE

Source of Revenue	Amount	% of Total	1978 National % Distribution
Local	$ 583,284,267	48.8	47.8
State	514,273,463	43.0	44.1
Federal	98,678,765	8.2	8.1
Total	$1,196,236,496	100.0	100.0

Prepared by: AFT Research Department with data taken from the Missouri State Board of Education, Report of the Public Schools Year Ending June 30, 1978; The 1979 Condition of Education, National Center for Education Statistics, Department of Health, Education and Welfare.

The proportion of Missouri educational revenues received from local, state and federal sources compares directly with the national average for percent distribution of educational revenues by source.

In Missouri, local revenues for education are derived primarily through local property taxes. Revenues from other taxes including intangible taxes, merchants and manufacturers taxes, fines, forfeitures, escheats, and state assessed utility taxes, also go to support public education.

Total state aid to public schools includes the minimum guarantee (foundation aid plus guaranteed tax base aid), transportation aid, exceptional pupil aid, textbook funds and vocational aid. During the six year period between 1973-74

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and 1978-79, Missouri state aid to public schools increased 45 percent. Table 10 shows total state aid apportionments for this period and the percent increase in aid over each previous year.

TABLE 10

TOTAL STATE AID APPORTIONMENTS
1973-74 to 1978-79

Year	Minimum Guarantee	Special State Aid*	Total State Aid	% Increase Over Previous Year
1973-74	$314,249,682	$45,850,071	$360,099,753	
1974-75	332,161,750	55,642,961	387,804,711	7.7
1975-76	345,919,507	61,234,921	407,154,428	5.0
1976-77	364,237,873	64,601,786	428,839,450	5.3
1977-78	397,297,810	83,541,640	480,839,450	12.1
1978-79	433,154,467	89,985,244	523,139,711	8.8

*Includes transportation, exceptional pupil and building abandonment

Prepared by: AFT Research Department calculations with data from the Missouri State Board of Education, Report of the Public Schools, Year Ending June 30, 1978.

General State Aid

The Missouri school finance formula draws upon two basic equalization formulas, the minimum foundation formula and the guaranteed tax base formula, to distribute general state aid to school districts. Both formulas address disparities among school districts in their abilities to support the cost of education. The cornerstone of the Missouri state aid program is the minimum foundation formula which guarantees each school district a specific level of educational spending per pupil. State aid becomes the difference between the guaranteed spending level and what the local district can provide. The guaranteed tax base formula provides additional state aid to districts who augment their required local effort to spend above the foundation amount. This formula guarantees each school district a relatively high tax base from which to raise additional local educational revenues.

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The Foundation Formula

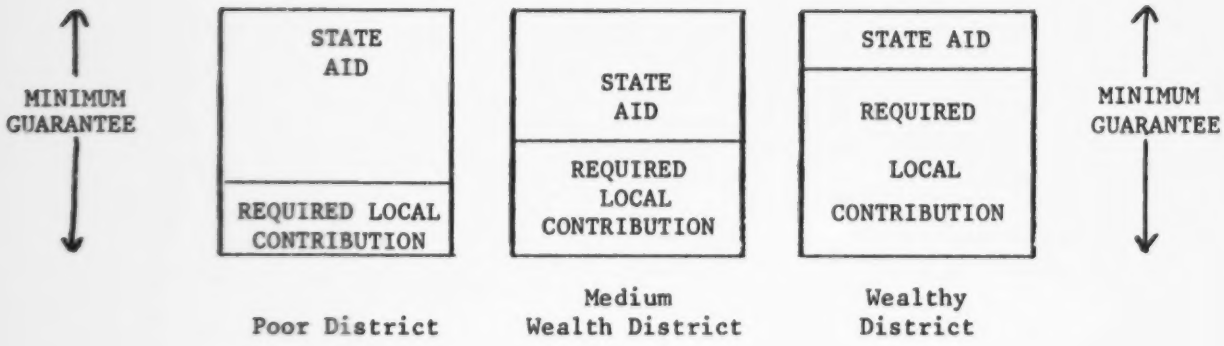
The foundation formula guarantees each school district regardless of wealth a basic amount of money for the cost of each pupil's education. The guaranteed amount is known as the foundation amount or the minimum guarantee.[2] The local school district must contribute to this guaranteed amount. State aid is the difference between the minimum guarantee and the required local contribution.

Foundation State Aid = Minimum Guarantee - Required Local Contribution

One can see by looking at the formula that state aid varies inversely as district wealth increases or decreases. Consider, as district wealth increases so will the required local contribution; therefore, state aid, the difference between the minimum guarantee and the required local contribution, will decrease. Illustration 1 shows how state aid varies inversely with district wealth.

ILLUSTRATION 1

FOUNDATION AMOUNT



[2]The term minimum guarantee is used interchangeably in Missouri to refer to both the guaranteed foundation amount and total general state aid (foundation plus guaranteed tax base aid).

The Minimum Guarantee

To determine foundation aid to a district, one must first calculate the district minimum guarantee. This minimum guarantee is based upon a state expenditure factor, the number of eligible pupils within the district, and the number of ADC children (Aid to Families with Dependent Children) and orphans in the district. The guarantee is computed as follows:

$$\text{Minimum Guarantee} = \left(\text{Number of Eligible Pupils} \times \text{75\% State Expenditure Factor}\right) + \left(\text{Number of ADC + Orphans} \times .25 \times \text{75\% State Expenditure Factor}\right)$$

State Expenditure Factor

The state expenditure factor is calculated each year by the Department of Elementary and Secondary Education of the State Board of Education. The factor is determined by dividing the state total of current expenditures for the second year preceding the award year by the state total of eligible pupils for the second preceding year.

$$\text{State Expenditure Factor (SEF)} = \frac{\text{State Total Current Expenditure}}{\text{State Total Eligible Pupils}}$$

(for second preceding year)

In 1977-78, the actual state expenditure factor (SEF) was $1,132. Recall that the formula for determining minimum guarantee specifies that 75% of the state expenditure factor be used. For 1977-78, .75 SEF is equal to $849.[3]

Pupil Eligibility

The pupil eligibility count is a combination of average daily membership (ADM) and average daily attendance (ADA). Pupil eligibility is found by dividing the sum of a district's ADM and ADA by two.

$$\text{Pupil Eligibility Count} = \frac{\text{ADM} + \text{ADA}}{2}$$

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[3]For 1978-79, .75 SEF was equal to $943 and for 1979-80, .75 SEF is equal to $1049.

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ADC and Orphans

The minimum guarantee assures each district additional money to offset the increased costs of providing educational services to disadvantaged children. The additional foundation amount is based upon the number of resident children between the ages of 5 to 18 who were enrolled in the public schools the previous September and are considered as either qualified recipients of Aid to Families with Dependent Children or orphans.

Combining all these factors, recall that the formula for calculating a district's minimum guarantee is:

$$\text{Minimum Guarantee} = \left(\text{Number of Eligible Pupils} \times \text{.75 State Expenditure Factor}\right) + \left(\text{.25 Number of ADC + Orphans} \times \text{.75 State Expenditure Factor}\right)$$

As an example, consider Flat Land district with the following student counts: ADM = 750, ADA = 700, resident enrolled ADC = 113 and resident enrolled orphans = 2. The minimum guarantee for this district for 1977-78 would be computed as follows: (.75 SEF = $849):

1) $\text{Number Eligible Pupils} = \frac{\text{ADM} + \text{ADA}}{2}$

$= \frac{750 + 700}{2}$

$= 725$

2) ADC + Orphan Count = ADC + Orphans

= 113 + 2

= 115

3) Minimum Guarantee = (# Eligible Pupils X .75 SEF) +
(ADC + Orphans X .25 X .75 SEF)

= (725 X $849) + (115 X .25 X $849)

= $615,525 + $24,409

= $639,934

(all figures rounded to nearest whole number)

To determine the minimum guarantee per pupil, simply divide the total minimum guarantee by the total number of eligible pupils. For Flat Land district, the minimum guarantee per pupil is equal to:

$\frac{\$639,934}{725} = \$882$ per pupil.

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EXERCISES ON MINIMUM GUARANTEE

1. Calculate the total eligibility count for the following districts:

	ADM	ADA
District A	1,250	1,220
District B	1,400	1,360

2. Calculate the total minimum guarantee and minimum guarantee per pupil for both District A and District B using the answers from the exercise above and the following information. Use the 1977-78 figure of $849 for 75% of the state expenditure factor.

	Orphan Count	ADC Count
District A	30	150
District B	100	350

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Required Local Contribution

Local school districts are expected to share in the cost of supporting public education according to their ability or local wealth. Most school districts raise educational revenues by levying a property tax on their local property wealth.

The next step toward computing state foundation aid is the calculation of the required local contribution, the amount the state requires a district to contribute to the Minimum Guarantee. In Missouri, the required local contribution represents a combination of educational revenues raised from property taxes, fines, forfeitures, and escheats, and taxes on intangibles. By far the single greatest source of local revenues is the property tax. That portion of the required local contribution derived through property taxes is computed by multiplying a district's property wealth, equalized assessed valuation, by a tax rate, the pupil weighted levy. The product is then adjusted by an income factor, to more closely reflect the ability of the tax payers in a district to support the cost of educational services.

Many economists argue that since property taxes are paid from personal income, property wealth alone is not an accurate measure of ability to pay or district wealth. Property wealth adjusted for personal income is a more sensitive measure of district wealth. For example, an aging industrial city may have a high property wealth and a low income level. A required local contribution based solely on property wealth or assessed valuation will be high since the city will appear to be rich. But a local contribution based on property valuation modified with an income measure will be considerably less as the city will look poorer.

The Missouri formula technically adjusts the tax rate (the pupil weighted levy), not the property value, upward or downward with the income factor. The result is that wealthier districts are required to levy a higher tax rate on their property value than poorer districts, thereby increasing their required local contribution. Mathematically, the net effect is the same as adjusting property value for income differentials.

The formula for calculating the required local contribution is:

Missouri Required Local Contribution Based on Property Wealth	=	Assessed Equalized Valuation	X	.57 Pupil Weighted Levy	X	District Income Factor

Equalized Assessed Valuation

A district's tax base for educational purposes is known as its equalized assessed valuation. Equalized assessed valuation differs from assessed valuation in that it attempts to eliminate the variations among districts in local assessment practices. Equalizing property values helps to insure that valuations are comparable across school districts, an important factor when state aid is distributed largely based on district property wealth. Interestingly, Missouri school districts include state assessed railroad and utility property valuation in their total district valuation.

Pupil Weighted Levy

The pupil weighted levy (PWL) is a uniform levy or tax set by the state's Department of Elementary and Secondary Education. It applies to all school districts in the computation of the required local contribution. The pupil weighted levy is determined by multiplying the equalized operating levy (school tax rate) for each district by the number of eligible pupils in each district, adding the product values for all districts, and dividing the sum by the state total number of eligible pupils.[4]

$$\text{Pupil Weighted Levy} = \frac{\Sigma \text{ (District Equalizing Operating Levy X District Eligible Pupils)}}{\Sigma \text{ All Eligible Pupils in State}}$$

(for second previous year)

The actual pupil weighted levy for grant year 1977-78 was $3.58 per one hundred dollars of assessed valuation. For the purpose of calculating the required local contribution, only 57 percent of the pupil weighted levy is used in the formula. For 1977-78, 57% of the pupil weighted levy was $2.04.[5]

District Income Factor

The district income factor is used to adjust the pupil weighted levy in the formula upward or downward to compensate for the effect of varying income levels

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[4] Data for the second preceding year is used in this computation.

[5] The actual pupil weighted levy for 1978-79 was $3.27; for 1979-80, $2.96. Fifty-seven percent of the pupil weighted levy for 1978-79 was $1.86; for 1979-80, $1.60.

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across districts. Data to calculate this factor for each district are obtained from the state income tax returns from each district. The key elements in the calculation of this factor are the district adjusted gross income per return and the state adjusted gross income per return. The district adjusted gross income per return is the total Missouri individual adjusted gross income in a school district divided by the total number of Missouri income tax returns filed from the school district, as reported by the State Department of Revenue for the second preceding year. The state adjusted gross income per return is determined similarly using aggregate income and tax return figures for the state.[6]

$$\text{District Income Factor} = \frac{1 + \frac{\text{District Adjusted Gross Income Per Return}}{\text{State Adjusted Gross Income Per Return}}}{2}$$

For example, if a district has an adjusted gross income per return of $5,000 and the state has an adjusted gross income per return of $10,000, the district income factor would be .75.

$$\text{District Income Factor} = \frac{1 + \frac{\$\ 5{,}000}{\$10{,}000}}{2}$$

$$= \frac{1.5}{2}$$

$$= .75$$

Multiplying the pupil weighted levy by the district income factor results in a value referred to as the income adjusted pupil weighted levy or the pupil weighted levy district income factor.

Calculating the Required Local Contribution

The preceding section examined how local educational revenues based on property taxes are derived. Earlier, it was stated that the required local

[6]The state adjusted gross income per return for 1977-78 was $11,485; for 1979-80 (estimated) $13,494.

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contribution represented a combination of revenues raised from property taxes, fines, forfeitures, and escheats, and taxes on intangibles. Combining all these factors, the formula for calculating a district's required local contribution is:

$$\text{Required Local Contribution} = \left(\frac{\text{Equalized Assessed Valuation}}{\$100} \times \text{57\% Pupil Weighted Levy} \times \text{District Income Factor}\right) + (\text{57\% Fines, Forfeitures, Escheats}) + (\text{57\% Intangible Taxes})$$

The formula specifies that 57 percent of all fines, forfeitures, escheats, et cetera and intangible taxes received the previous year for school purposes be included in the required local contribution.

As an example of how the required local contribution is calculated, consider again Flat Land district with an equalized assessed valuation of $16,500,000; a district income factor of .93; total fines, forfeitures, escheats et cetera of $1,700; and total intangible taxes of $2,200. Use the 1977-78 figure of $3.58 for the actual pupil weighted levy. Fifty-seven percent of the pupil weighted levy is $2.04.

$$\begin{aligned}\text{Required Local Contribution} &= \left(\frac{16,500,000}{100} \times 2.04 \times .93\right) + (.57 \times 1700) + (.57 \times 2200)\\ &= (165,000 \times 2.04 \times .93) + 969 + 1254\\ &= 313,038 + 969 + 1254\\ &= \$315,261\end{aligned}$$

EXERCISES ON REQUIRED LOCAL CONTRIBUTION

1. Compute the district income factor for District A and District B. Use the 1977-78 figure of $11,485 for the state adjusted gross income per return.

	District Adjusted Gross Income Per Return
District A	8,550
District B	6,700

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EXERCISES ON REQUIRED LOCAL CONTRIBUTION CONT.

2. Calculate the total required local contribution and the contribution per pupil for District A and District B above using the following additional information. Use the 1977-78 figure of $2.04 for .57 PWL.

	District A	District B
Equalized Assessed Valuation	43,500,000	21,800,000
Fines, forfeitures, escheats	2,100	1,200
Revenue from intangible taxes	3,400	2,200
Eligible Pupils	1,235	1,380

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State Aid - The Basic Apportionment

Having learned how to calculate the minimum guarantee and the required local contribution, one can now compute state aid under the foundation formula, the first part of the Missouri school finance plan. State aid, known as the basic apportionment, is simply the difference between the minimum guarantee and the required local contribution.

$$\text{Basic Apportionment} = \text{Minimum Guarantee} - \text{Required Local Contribution}$$

As an example of how to compute state aid, remember Flat Land district with a minimum guarantee of $639,934 (p. 19) and a required local contribution of $315,261 (p. 24). State aid to this district would be $324,673, the difference between the minimum guarantee and the required local contribution.

$$\text{Basic Apportionment} = \$639,934 - \$315,261$$
$$= \$324,673$$

To calculate state aid per pupil, divide the total state aid apportionment by the number of eligible pupils in the district. For Flat Land district, state aid per pupil is equal to $\frac{\$324,673}{725}$ or $448 per pupil.

EXERCISES ON THE BASIC APPORTIONMENT

1. Using the Minimum Guarantee calculated for District A and District B on page 20 and the Required Local Contribution calculated for both on pages 24 and 25, now calculate the total state foundation aid or minimum guarantee aid, and state aid per pupil.

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Guaranteed Tax Base Add-On

As stated earlier, the Missouri school finance plan provides two types of general state aid. The foundation formula or Minimum Guarantee formula, discussed in the previous section, assures each school district a basic level of educational spending per pupil. The Guaranteed Tax Base Add-On (GTB Add-On) represents additional general state aid for moderate to low wealth districts who tax themselves above the required local rate (PWL district income factor) in order to spend above the Minimum Guarantee.

A basic guaranteed tax base formula assures each school district in the state that it can act as if it had a tax base or level of property wealth equal to that of some level or standard set by the state. Under this type of plan, the local school district is free to choose the tax rate it wishes to levy upon it's property wealth for the purpose of raising educational revenues. This tax rate is then applied to the state guaranteed tax base and to the actual tax base of the district. State aid is the difference between what could be raised with the guaranteed tax base and what is actually raised by the district from its local property wealth. The generic formula for a guaranteed tax base state aid plan is:

$$\text{State Aid} = \left(\text{Guaranteed Tax Base} \times \text{Local Tax Rate}\right) - \left(\text{Local Tax Base} \times \text{Local Tax Rate}\right)$$

From the formula one can readily see that as long as the local tax base is less then the guaranteed tax base, the district will receive state aid.

The formula for the Missouri Guaranteed Tax Base Add-On follows the above basic formula with some modifications. Essentially, since all school districts must levy a tax rate equal to 57% of the pupil weighted levy adjusted for income to receive basic state foundation aid, to receive additional GTB aid, they must not only have a tax base less than the guaranteed tax base but they also must levy a school tax rate greater than the required 57% of PWL adjusted for income.

The formula for computing the Missouri Guaranteed Tax Base Add-On is:

$$\text{GTB Add-On} = \frac{(\text{GTB} - \text{District Equalized Assessed Valuation Per Pupil})}{100} \times \text{Number of Eligible Pupils}$$

$$\text{Multiplied by } \text{District Equalized Operating Levy} - .57 \text{ Pupil Weighted Levy District Income Factor}$$

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The guaranteed tax base (GTB) is the amount of equalized assessed valuation per eligible pupil guaranteed each school district by the state in the computation of state aid. Each year districts are ranked from lowest to highest according to the amount of equalized assessed valuation per eligible pupil. For the 1977-78 school year, the GTB was the amount of equalized assessed valuation per eligible pupil of the school district in which the eighty-fifth percentile (85%) of the aggregate number of eligible pupils fell during the preceding year. During 1977-78, the GTB was $24,238 per eligible pupil. Beginning in 1978-79 and every school year thereafter through 1982-83, the percentile level used to determine the GTB will increase one percent, capping at ninety percent in 1982-83.[7]

There are essentially three steps in computing a district's additional state aid using the GTB Add-On Formula. The first step is to determine the difference between the state guaranteed tax base per eligible pupil and the district's actual tax base per eligible pupil, and divide that difference by 100.

1. $\frac{\text{GTB - District Equalized Assessed Valuation Per Eligible Pupil}}{100}$

The second step is to determine the difference between the district's actual operating levy (school tax rate) and the required pupil weighted levy adjusted for income.

2. District Equalized Operating Levy - .57 Pupil Weighted Levy District Income Factor

The third step is to multiply the difference found in step (1) by the difference in step (2). This product is the total GTB Add-On per eligible pupil a district is qualified to receive. To calculate the total dollars in GTB Add-On that goes to the district, multiply the result in step (3) by the total number of eligible pupils in the district.

As an example of how to calculate the GTB Add-On, consider again Flat Land district with the following characteristics: equalized assessed valuation = $16,500,000; equalized operating levy = $2.50; number of eligible pupils = 725; district income factor = .93. The 1977-78 GTB is $24,238 and the 1977-78 figure for 57% PWL is $2.04.

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[7]The GTB for 1979-80 is $37,361.

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Before calculating the GTB Add-On, the district equalized assessed valuation per eligible pupil and the PWL district income factor must first be determined.

1. $\frac{\text{E.A.V.}}{\text{Eligible Pupil}} = \frac{\$16,500,000}{725} = \$22,758$

2. .57 PWL District Income Factor = (.57 PWL) X (District Income Factor)

   = 2.04 X .93

   = 1.90

$$\text{GTB Add-On} = \left(\frac{\text{GTB} - \text{E.A.V. Per Eligible Pupil}}{100}\right) \text{X} \left(\text{Eq. Operating Levy} - \text{.57 PWL District Income Factor}\right) \text{X} \left(\text{Number Eligible Pupils}\right)$$

$$= \frac{(24,238 - 22,758)}{100} \text{ X } (2.50 - 1.90) \text{ X } (725)$$

$$= \left(\frac{1480}{100}\right) \text{X } .60 \text{ X } 725$$

$$= 14.80 \text{ X } .60 \text{ X } 725$$

Total GTB Add-On = $6,438

GTB Add-On Per Eligible Pupil = 14.80 X .60

= $8.88

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EXERCISES ON GTB ADD-ON

1. Calculate the total GTB Add-On and the Add-On per pupil for District A and District B using the following information. Use the 1977-78 figure of $2.04 for .57 PWL and $24,238 for the guaranteed tax base. (Hint: first calculate the equalized assessed valuation per pupil and then the pupil weighted levy adjusted for income factor).

	District A	District B
EAV	43,500,000	21,800,000
District Income Factor	.87	.79
Eligible Pupils	1,235	1,380
Equalized Operating Levy	3.35	3.45

2. Calculate the total GTB Add-On and Add-On per pupil for District A with a new EAV = $28,000,000.

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Total State Aid Apportionment

Total state general aid apportioned to a district is the sum of the district's foundation aid (minimum guarantee minus required local contribution) and the GTB Add-On. In the Example, total state aid to Flat Land district is equal to $324,673 + $6,438 or $331,111.

One cautionary note here, often the Missouri Department of Education refers to total state general aid as the Minimum Guarantee. Therefore, care must be exercised when using this term.

EXERCISES ON TOTAL STATE AID

1. Calculate the total state aid and state aid per pupil, foundation aid plus GTB Add-On, apportioned to District A and District B. Refer back to the calculations on page 26 and 30.

2. Calculate the total state aid and aid per pupil District A is eligible to receive if its tax base were only $28,000,000. Refer back to the calculations on page 26 and 30, exercise 2.

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Limited Apportionment

The Missouri School Finance Formula has a limited apportionment provision which protects against excessive increases in state aid to districts from year to year. The provision states that no district shall receive in state aid an amount per eligible pupil which is greater than the amount received the previous year plus twenty-five percent (25%) of the difference between this year's state aid apportionment per eligible pupil and the amount per pupil received the previous year.

$$\text{Limited Apportionment} = \frac{\text{Prev. Yr. State Aid}}{\text{Eligible Pupil}} + .25\left(\frac{\text{Current Apportionment}}{\text{Eligible Pupil}} - \frac{\text{Prev. Yr. State Aid}}{\text{Eligible Pupil}}\right)$$

For example, Flat Land district's total apportionment for this year is $331,111 or $457 per eligible pupil. If last year Flat Land district received $400 per eligible pupil in state aid then this year, Flat Land district would receive:

$$\frac{\text{Limited}}{\text{Apportionment}} = 400 + .25 \times (457 - 400)$$

$$= 400 + 14$$

$$= \$414 \text{ per eligible pupil}$$

$$\text{Total State Aid} = \$414 \text{ per eligible pupil} \times 725 \text{ eligible pupil}$$

$$= \$300,150$$

If the Missouri General Assembly appropriates more or less funds than is necessary to meet the Limited Apportionment for all districts, then the twenty-five percent factor will be adjusted to allow for the distribution of available funds. However, no district can receive an amount of aid greater than the actual current district apportionment (foundation aid plust GTB Add-On).

EXERCISES ON LIMITED APPORTIONMENT

1. Calculate the Limited Apportionment for District A and District B if last year they received $242 per eligible pupil and $800 per eligible pupil respectively.

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Hold Harmless

Finally, the Missouri formula incorporates a hold harmless provision for those districts beginning in 1978-79 and each year thereafter for 5 years which would otherwise be entitled to a smaller state aid apportionment per eligible pupil than the previous year's apportionment. The provision states that these districts shall receive a reduced apportionment over the previous year. The reduction has been defined as twenty percent (20%) of the difference between 1976-77 state aid per eligible pupil and the current apportionment per eligible pupil.

$$\text{Hold Harmless} = \frac{\text{Prev. Yr. Aid}}{\text{\# Elig. Pupils}} - .20 \times \left(\frac{\text{76-77 Aid}}{\text{\# Elig. Pupils}} - \frac{\text{Current Aid Apportionment}}{\text{\# Eligible Pupils}} \right)$$

Having calculated this amount of district hold harmless aid, the provision specifies that a district shall receive no less than 1) the calculated amount; or 2) the current apportionment per eligible pupil; or 3) $283 per eligible pupil; whichever is greater. The $283 base figure shall be multiplied annually by the same percent that the appropriation of state funds for the foundation program is changed from the previous year, and the product added to the amount per eligible pupil apportioned the previous year. This annual adjustment shall not exceed the percent of annual adjustment for the average of the lowest five percent of districts receiving state aid.

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CHAPTER IV

STUDYING MISSOURI'S SCHOOL FINANCE PLAN

The school finance reform movement of the past decade has resulted largely from court challenges to existing school finance plans on the grounds that they violated equal protection provisions within state constitutions. The courts have held that the quality of education a student receives should not be dependent upon the wealth of the district in which the pupil resides. Central to the discussions of the school finance reform movement are two concepts: fiscal equity and educational equity.

While there is some ambiguity among school finance experts as to the precise meaning of these two terms, fiscal equity generally refers to the ability of school districts to raise educational revenues while educational equity refers to the distribution of educational resources or the availability of educational opportunities across districts.

The concept of fiscal equity recognizes that due to varying degrees of local wealth, school districts have varying abilities to raise educational revenues. Typically, since most local revenues for education are raised through a local property tax, district wealth is defined as equalized property value per pupil. Recall that the Missouri formula adjusts local wealth, based on equalized assessed property value, for personal income. This adds a dimension to wealth which some economists claim is a more accurate measure of ability to pay for services since all taxes, regardless of the property tax base, are paid out of income. By equalizing the abilities of school districts to raise educational revenues through comparable effort, fiscal equity or fiscal neutrality is achieved.

Fiscal equity does not necessarily result in any lessening of the differences in levels of educational services provided, as measured by expenditures per pupil. Fiscal equity only requires that differences in educational services not be a function of wealth. However, differences in educational expenditure levels may result from the desire of some districts to offer a higher level of educational services through higher property tax rates.

Educational equity refers to the level or quality of educational services provided students across school districts. It is commonly measured in terms of expenditures per pupil. While expenditures do not accurately measure educational

services, a higher expenditure per pupil does suggest the ability, on the part of school districts, to hire additional or more experienced teachers, to offer more innovative instructional materials or educational programs, to expand facilities, etc. Under this concept, differences in per pupil expenditures are allowed as long as they are based on some rational measure of differing student need.

The manner in which equalization is defined and measured, and the criteria used for determining if "equalization" is achieved are important considerations in evaluating the impact of a state school finance plan. A plan may do well toward alleviating one type of disparity without affecting other types of disparities. For example, a plan may equalize per pupil expenditures among school districts, but in the process increase the disparity among districts in the school tax rates they levy. Most often a school finance plan addresses both the needs for equity in the raising of resources and in the distribution of resources.

The Missouri school finance plan is designed primarily to achieve equity in the raising of educational revenues; however, it also addresses equity in the distribution of resources. The minimum guarantee or foundation formula guarantees all school districts, regardless of local wealth, a basic amount of money to cover the cost of each pupil's education. State aid, distributed in inverse relation to local wealth, insures that each district will be able to achieve this guaranteed level of spending despite its limited ability to raise revenues. The extent to which this formula is equalizing depends upon the level of the state guarantee and the amount of revenue a district chooses to raise above the required local contribution. As local districts tax above the mandated tax rate, disparities among district abilities to raise revenues widen, because the wealth of the district determines the amount of money which can be raised above the foundation level. The Missouri GTB Add-On addresses this disparity by guaranteeing each school district taxing above the required level, a relatively high tax base.[8] This effectively guarantees all districts levying the same school tax rate equal educational revenues per pupil above the foundation amount. Thus, the total amount of revenue available for educational spending within a district is directly dependent upon the willingness of a district to tax itself above the

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[8]The guaranteed tax base is equal to that of the district in which the 85th percentile of the aggregate number of eligible pupils falls during the preceding year when all districts are ranked in ascending order according to property wealth.

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required rate, which is tailored to reflect the individual district's overall wealth or ability to pay.

Toward achieving equity in the distribution of educational revenues, the Missouri minimum guarantee or foundation formula defines the guaranteed amount for spending for each district individually based upon its needs. The formula recognizes, as part of its definition of equity, the principle of different treatment for different needs. By incorporating the number of district ADC children and orphans into the calculation of the minimum guarantee, the state directs more aid to those districts with disadvantaged children. This is especially beneficial to large urban districts with sizeable populations of ADC recipients. These districts, whose resources are already sorely stretched by public services, must also bear the increased cost associated with providing specially targeted services to disadvantaged students.

This chapter looks at the differences among Missouri school districts in the distribution of educational resources as measured by per pupil expenditures and in their abilities to raise educational resources as measured by per pupil expenditures and in their abilities to raise educational revenues, considering district wealth and school tax rates. The purpose of this chapter is not to suggest a new approach to equity or even judge the equity of Missouri's school finance plan, but to introduce some basic ways in which the different approaches can be analyzed.

Distribution of Educational Resources

The most direct way of analyzing the distribution of educational resources is to consider the differences among school districts in their educational spending per pupil. To begin the investigation of possible disparities in district educational expenditures, a small, working sample of 20 Missouri school districts has been developed. Table 11 shows the current operating expenditures per eligible pupil of these districts arranged in order from the district with the highest per pupil expenditure to the district with the lowest per pupil expenditure. The data is for current operating expenditures which do not include expenditures for school food services, student body activities, community services, capital outlay, and debt service.

A quick examination of the data shows the wide differences in per pupil expenditures among districts for 1977-78. However, in order to analyze the degree

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of disparity, it is useful to employ certain statistical techniques which help to summarize the data. For the purpose of our discussion, we will use some of the basic techniques. Keep in mind there are more sophisticated statistical techniques which can be used to yield more comprehensive analyses.

The simplest summary technique is the range, the difference between the highest and lowest values. The range indicates the extremes or how widely dispersed the districts are. In looking at how widespread the difference is between the highest and lowest values, it is important to keep in mind the relative size of the sample. For our sample, the range is the difference between the per pupil expenditures for Clayton (the highest value) and Richland (the lowest value):

$$\$3,442 - \$1,104 = \$2,428 \qquad \text{Range}$$

Given there are only 20 districts in our sample, the range is quite high.

Another way to look at the range is to examine the ratio between the highest value and the lowest value. The range ratio for our sample is 3.39 to 1 or 3 to 1:

$$\frac{\$3442}{\$1014} = 3.39 \text{ to } 1 \qquad \text{Range Ratio}$$

The range ratio shows that Clayton spends more than three times as much on education per pupil as does Richland. The range and range ratio are also used to show how closely the summary measures of central tendency represent the entire sample.

The measures of central tendency are the simple mean, the weighted mean, and the median. They are so called because they describe some central point or value in the data. These measures are used to describe differences by comparing their values with the actual values of individual districts in the sample. For example, you may indicate how much a particular district varies from the average. Or you may choose to group the districts by degree of variance from the average.

The simple mean, or arithmetic average, is the most familiar method of summarizing data. The mean or average per pupil expenditure in our sample is $1,403. This is found by dividing the sum of all districts' per pupil expenditures by 20, the number of districts in the sample.

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TABLE 11

CURRENT OPERATING EXPENDITURES
PER ELIGIBLE PUPIL 1977-78
SAMPLE OF 20 MISSOURI DISTRICTS

DISTRICT	TOTAL CURRENT OPERATING EXPENDITURES	ELIGIBLE PUPILS	EXPENDITURES PER ELIGIBLE PUPIL
Clayton	$ 5,923,682	1,721	$3,442
Kansas City	75,131,936	40,744	1,844
Tri County	368,704	224	1,646
Cooper County	293,376	191	1,536
Winston	318,207	219	1,453
Bucklin	425,477	299	1,423
Hickman Mills	15,311,520	11,160	1,372
Everton	273,470	205	1,334
Miami	466,716	356	1,311
Plattsburgh	985,076	766	1,286
Browning	526,680	420	1,254
LaPlata	521,235	429	1,215
Brookfield	1,618,344	1,352	1,197
Windsor	905,412	766	1,182
Clark County	1,509,970	1,295	1,166
Fredericktown	1,956,030	1,731	1,130
Vandalia	1,130,808	1,016	1,113
Maries County	773,519	709	1,091
Crane	574,520	542	1,060
Richland	666,198	657	1,014
TOTAL	$109,680,880	64,802	$28,069

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$$\frac{\$28,069}{20} = \$1,403 \qquad \text{Simple Mean}$$

As a measure of central tendency, the simple mean can be misleading if there are wide differences in the number of pupils among districts. In computing the simple mean, we placed equal weight on each of the values for per pupil expenditures, which themselves represent "averages" of total expenditures per total ADM. Thus, some distortion results from counting a per pupil expenditure of $1,372 for Hickman Mills with an eligible pupil count of 11,160 the same as a per pupil expenditure of 1,334 for Everton with an eligible pupil count of 205.

This problem can be overcome by calculating a weighted mean or weighted average which does account for the differences among districts in pupils. The weighted average is found by dividing the total current operating expenses for all districts by the total eligible pupil count for all districts:

$$\frac{\$109,680,880}{64,802} = \$1,693 \qquad \text{Weighted Mean}$$

The median is the middle value when you arrange the values according to size. The per pupil expenditures in Table 11 have been arranged by size from the highest per pupil expenditure to the lowest. The median is the per pupil expenditure that lies halfway between the district with the highest value and the district with the lowest value. As an example, in a distribution with an odd number of values, say 5, the median is the middle or third value (1 2 3 4 5). In our sample of 20 districts, the median is the value which divides the 20 districts into 2 equal parts. Thus, it lies midway between the 10th and 11th values or between $1,286 (Plattsburgh) and $1,254 (Browning). The median is computed as follows:

(1) $\frac{\$1,286 - \$1,254}{2} = \frac{32}{2} = 16$

(2) $\$1,254 + 16 = \$1,270$ Median

or (3) $\$1,286 - 16 = \$1,270$ Median

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A summary of the data on per pupil expenditures for our 20 Missouri school districts (Table 11) follows:

Range:	$2,428
Range Ratio:	3.39 to 1
Simple Mean:	$1,403
Weighted Mean:	$1,693
Median:	$1,270

EXERCISES

1. From Table 11, develop a summary table, like the one above, for the following districts.
   Cooper County
   Everton
   LaPlata
   Fredericktown
   Richland

2. Develop a summary table for St. Louis, Kansas City, North Kansas City and Springfield.

DISTRICT	TOTAL CURRENT EXPENDITURES	ELIGIBLE PUPILS	EXPENDITURE PER PUPIL
St. Louis	$124,832,080	66,970	$1,864
Kansas City	75,131,936	40,744	1,844
North Kansas City	23,615,640	18,508	1,330
Springfield	20,505,568	22,489	1,312

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Statewide Per Pupil Expenditure Disparities

We have used the small sample of 20 districts to illustrate how data can be summarized for the purpose of analyzing disparities among districts' per pupil expenditures. However, such a small sample cannot be very representative of the entire state. Because of the computation problems of dealing with all 557 Missouri school districts, a uniformly distributed random of 100 districts, representative of the state, has been developed.

Table 12 shows the summary data for the random sample of 100 districts.

TABLE 12

SUMMARY MEASURES OF 1977-78 PER PUPIL EXPENDITURES
SAMPLE OF 100 MISSOURI SCHOOL DISTRICTS

Highest Spending District (Clayton)	$3,442
Lowest Spending District (Strain-Japan)	$ 755
Range	$2,687
Range Ratio	4.56 to 1
Simple Mean	$1,312
Weighted Mean	$1,507
Median	$1,264

The range and range ratio for the sample of 100 districts is greater than for the small sample of 20 districts. This is generally to be expected. In the large sample, the highest spending district, Clayton, spends four and one half times more on education per pupil than the lowest spending district, Strain-Japan.

The simple mean and weighted mean in this sample are both less than the values for the sample of 20 districts, indicating that within the sample of 100 districts there are more lower spending districts relative to the number of eligible pupils being served. The weighted mean of $1,507 in the larger sample is considerably greater than either of the other two measures of central tendency: the simple mean, $1,312, or the median, $1,264. This difference indicates that there are several large districts (high number of eligible pupils) spending well above the average expenditure per pupil. The two most notable districts in this category are St. Louis with 66,970 eligible pupils and Kansas City with 40,744

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eligible pupils. In 1977-78, St. Louis spent an average $1,864 per eligible pupil and Kansas City spent a close $1,844 per eligible pupil. Hickman Mills, North Kansas City and Springfield are also large districts spending above the average amount.

Another way of analyzing differences in spending is to look at the distribution of expenditures within the sample. Table 13 shows 1) the number and percentage of school districts that fall within each of eight expenditure ranges and 2) the total number of eligible pupils served by the districts in each spending range. Each of the measures of central tendency falls within a different expenditure range. Seventeen percent of the districts in the sample and 25.3 percent of the total eligible pupils fall within the expenditure range of the mean, $1,301 to 1,400. Fifty-six percent of the districts spend less than the average amount of $1,312 per pupil. This suggests that almost 32 percent of the total eligible pupils are receiving a less than average level of educational services. If both the simple mean and median are taken into consideration, 41 percent of the districts in the sample and 21.1 percent of the eligible pupils fall within less than average expenditure ranges. Interestingly, at the other extreme, 12 percent of the districts spend well above the average amount per pupil for education. Similarly, the table shows that more than 39 percent of the students are receiving an above average level of educational expenditures. The two districts of St. Louis and Kansas City account for 88 percent of these students.

TABLE 13

DISTRIBUTION OF PER PUPIL EXPENDITURES FOR 1977-78
100 MISSOURI SCHOOL DISTRICTS

1977-78 PER PUPIL EXPENDITURE RANGES $'S	NUMBER OF DISTRICTS	PERCENT OF DISTRICTS	NUMBER OF ELIGIBLE PUPILS	PERCENT OF ELIGIBLE PUPILS
1,000	4	4	1,841	0.6
1,000 - 1,100	15	14	20,521	6.6
1,101 - 1,200	22	22	43,404	13.9
1,201 - 1,300	15	15	32,965	10.6
1,301 - 1,400	17	17	78,852	25.3
1,401 - 1,500	10	10	10,797	3.5
1,501 - 1,600	5	5	1,464	0.5
Above 1,600	12	12	122,185	39.2
Total	100	100	312,029	100.2

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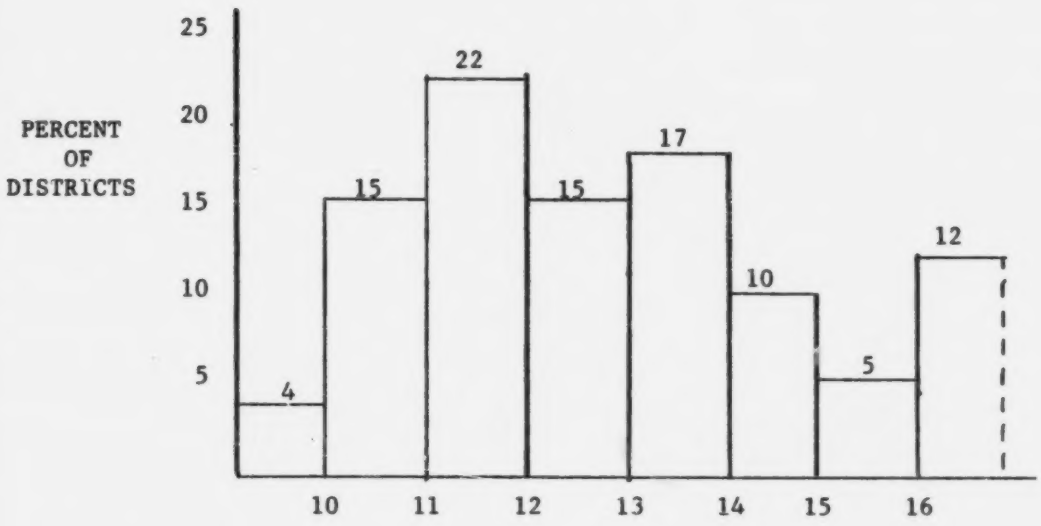
Another way to show these differences is to present the information in Table 13 graphically. Figure 1 does this using a bar graph.

FIGURE 1

DISTRIBUTION OF PER PUPIL EXPENDITURES FOR 1977-78
100 MISSOURI SCHOOL DISTRICTS



Per Pupil Expenditures
(Hundreds of $'s)

Prepared by: The AFT Research Department

Differences in District Wealth

In the previous section, disparities among districts in per pupil expenditures were examined. Since most local revenues for education are raised through local property taxes, a significant portion of the disparity in per pupil expenditures may be attributed to differences in local wealth. While the foundation or minimum guarantee formula assures all districts relatively equal expenditures per pupil, local districts are permitted to generate additional revenues above the guaranteed level. The GTB Add-On serves to equalize these additional revenues according to local effort. This section will examine the differences among school districts

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in local property wealth. Table 14 shows equalized assessed valuations per pupil for the small sample of 20 districts.

By far, the wealthiest district in the sample is Clayton with an equalized assessed valuation of $90,119 per pupil. Clayton is also the highest spending district. Comparing the results of this table with Table 11, the four wealthiest districts are also the four highest spending districts. Similarly, the two poorest districts are also the two lowest spending districts. The range for this sample is $77,882, extremely high for such a small sample. The range ratio indicates that Clayton has a tax base which is seven times the tax base of Crane, the poorest district. The summary data for our sample follows:

Wealthiest District: (Clayton)	$90,119
Poorest District: (Crane)	$12,237
Range:	$77,882
Range Ratio:	7.36 to 1
Simple Mean:	$25,728
Weighted Mean:	$32,230
Median:	$22,760

Note that because of the large range in property values, the average property value has been skewed toward the high wealth end. If the extreme high property value for Clayton is eliminated and the simple mean for the sample recalculated based on 19 districts, the new value for the simple mean is $22,338 which more closely reflects the average property value for this sample.

For a more accurate representation of district wealth across the state, the data for the sample of 100 Missouri districts will again be referred to. The summary measures for the 100 districts follows:

Wealthiest District: (Clayton)	$90,119
Poorest District: (Ripley County)	$ 6,728
Range:	$83,391
Range Ratio	13.4 to 1
Simple Mean:	$29,400
Weighted Mean:	$25,032
Median:	$22,082

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TABLE 14

EQUALIZED ASSESSED VALUATIONS PER ELIGIBLE PUPIL
SAMPLE OF 20 MISSOURI SCHOOL DISTRICTS

DISTRICT	TOTAL EQUALIZED ASSESSED VALUATION	ELIGIBLE PUPILS	EQUALIZED ASSESSED VALUATION PER ELIGIBLE PUPIL
Clayton	$ 155,094,799	1,721	$ 90,119
Kansas City	1,519,832,688	40,744	37,302
Cooper County	6,052,026	191	31,686
Tri County	6,512,576	224	29,074
Browning	11,880,120	420	28,286
Windsor	19,942,044	766	26,034
Winston	5,431,200	219	24,800
Clark County	31,107,195	1,295	24,021
Miami	8,294,444	356	23,299
Plattsburgh	17,792,648	766	23,228
Bucklin	6,665,308	299	22,292
LaPlata	9,405,825	429	21,925
Vandalia	21,082,000	1,016	20,750
Brookfield	26,900,744	1,352	19,897
Maries County	12,025,349	709	16,961
Everton	3,469,830	205	16,926
Hickman Mills	183,582,000	11,160	16,450
Fredericktown	28,464,564	1,731	16,444
Richland	8,423,397	657	12,821
Crane	6,632,454	542	12,237
Total	2,088,591,211	64,802	514,552

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From the summary measures, it is readily apparent that there is a wide dispersion of property values across the state. The wealthiest district, Clayton, has an equalized assessed valuation per pupil 13 times greater than that of the poorest district, Ripley County. The weighted mean and median are very close in value, suggesting these might be the truer measures of central tendency for this sample. Interestingly, both these values correspond closely to the state guaranteed tax base (GTB) of $24,238 per eligible pupil for the same academic year, 1977-78. Remember that the guaranteed tax base level for GTB aid is the amount of equalized assessed valuation per eligible pupil of the district in which the 85th percentile of the aggregate number of eligible pupils fell when ranking the districts in order from the poorest to the wealthiest district. The value for the simple mean is higher than that for the weighted mean or median, indicating there are a significant number of extremely wealthy districts in the sample.

Table 15 and Figure 2 show the distribution of property values across school districts. Thirty-seven percent of the districts in the sample have a property value which falls within the range of central tendency, $20,000 to $30,000 EAV per eligible pupil (equalized assessed valuation). These districts account for 60 percent of the eligible pupils. Included within this range are several large urban districts: St. Louis City, Springfield, Columbia, and North Kansas City. Forty-three percent of the districts have an EAV per pupil which is less than the average range. These districts account for 25.7 percent of the population, a sizeable portion of the total population. Finally, 20 percent of the districts and 20 percent of the eligible pupils benefit from district property values well in excess of the average values.

Another way to look at the differences in district property wealth is to rank the districts by deciles in order of size. Deciles divide a distribution into 10 subdivisions, with each subdivision having an approximately equal number of districts.

Within our sample of 100 districts, each subdivision will represent 10 districts. Table 16 shows the distribution of district EAV per eligible pupil by deciles.

Again, this table demonstrates a wide disparity among districts in local property wealth. If the extreme values are eliminated and only the values at the 90th percentile (35,962) and the 10th percentile (12,821) are considered, the

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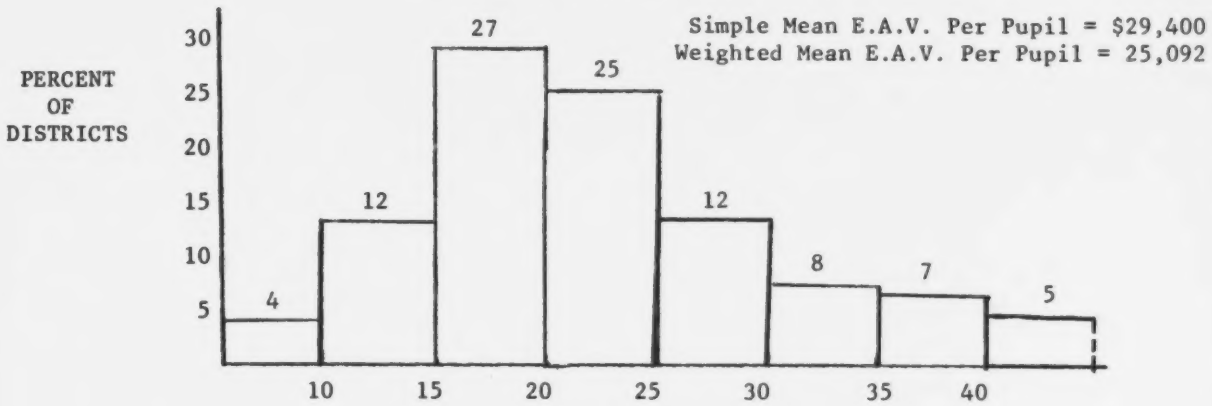
TABLE 15

DISTRIBUTION OF EQUALIZED ASSESSED VALUATION
PER ELIGIBLE PUPIL, 1977-78
SAMPLE OF 100 MISSOURI DISTRICTS

EQUALIZED ASSESSED VALUATION PER ELIGIBLE PUPIL	NUMBER OF DISTRICTS	PERCENT OF DISTRICTS	NUMBER OF ELIGIBLE PUPILS	PERCENT OF ELIGIBLE PUPILS
Less than $10,000	4	4	2,493	0.8
10,000 - 15,000	12	12	11,061	3.5
15,001 - 20,000	27	27	66,767	21.4
20,001 - 25,000	25	25	149,788	48.0
25,001 - 30,000	12	12	22,274	7.1
30,001 - 35,000	8	8	4,214	1.4
35,001 - 40,000	7	7	48,054	15.4
Above 40,000	5	5	7,378	2.4
Total	100	100	312,029	100.0

FIGURE 2

DISTRIBUTION OF EQUALIZED ASSESSED VALUATION
PER ELIGIBLE PUPIL, 1977-78
SAMPLE OF 100 DISTRICTS



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range in property values is considerably smaller. The new range ratio is 2.8 to 1 as compared to 13.4 to 1 for the entire sample.

TABLE 16

E.A.V. PER ELIGIBLE PUPIL BY DECILES
SAMPLE OF 100 MISSOURI DISTRICTS

DECILE	MAXIMUM VALUE	MEAN VALUE	MINIMUM VALUE
10	$90,119	$46,761	$36,106
9	35,962	32,645	30,213
8	29,507	28,418	26,572
7	26,034	24,666	24,021
6	23,440	22,771	22,239
5	21,925	20,660	19,151
4	19,010	18,027	16,961
3	16,926	16,240	15,536
2	15,345	14,439	13,482
1	12,821	10,429	6,728

Prepared by: The AFT Research Department

Differences in Tax Effort

Under the Missouri school finance plan, districts are required to levy a specified property tax rate, 57 percent of the state determined pupil weighted levy. For the purpose of calculating district foundation or minimum guarantee aid, the pupil weighted levy is adjusted for each district by an income factor which relates local effort to local ability to pay. To this extent, local effort is equalizing.

However, all districts are permitted to levy tax rates above the required level to generate additional revenues. The GTB Add-On serves to equalize these additional revenues generated by districts through increased local effort. In this way, poorer districts are not penalized because they cannot substantially increase their local effort beyond the required level to keep up with richer districts. The amount of GTB equalizing aid a district receives is directly dependent upon local effort. Since each district is effectively guaranteed the

same tax base through the GTB aid plan, the amount of additional revenue a district raises for education depends on the tax it levies.

In this section, the differences among districts in operating levies will be examined. Keep in mind that while the GTB Add-On plan provides additional state aid to districts demonstrating increased local effort above the required level, for a poor district the increased effort can represent a considerable burden.

Table 17 shows the operating levy for the small sample of 20 districts. The district in this sample with the highest tax rate, 4.35, is Tri County, which also ranks among the highest spending and the wealthiest districts in the sample. The districts with the lowest tax rates are Crane, 3.10, and Richland, 2.56. These two districts are the poorest districts and the lowest spending districts. The mean operating levy is 3.63.

For the larger sample of 100 districts, the summary measures follows:

Highest Taxing District: (Liberty)	4.90
Lowest Taxing District: (Ripley County)	2.10
Range:	2.80
Range Ratio:	2.33 to 1
Simple Mean:	3.67
Median:	3.73

It is evident from the summary measures that there is a fairly wide variance among districts in local effort. The highest taxing district has an operating levy more than twice the lowest taxing district.

Table 18 and Figure 3 offer a clearer description of the differences in tax rates among districts. Thirty-nine percent of the districts fall within the average tax range of 3.51 to 3.75. Thirty-four percent of the districts tax below the average level and twenty-seven percent tax above the average level.

Comparing Wealth with Educational Services

The preceding sections examined the differences among school districts in educational expenditures per pupil, equalized assessed valuations per pupil, and operating levies. This section will compare some of those differences to determine if there are any relationships suggested between district wealth or ability to raise revenues and the level of educational services.

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TABLE 17

DISTRICT OPERATING LEVIES, 1977-78
SAMPLE OF 20 MISSOURI DISTRICTS

DISTRICT	OPERATING LEVY[1]
Tri County	4.35
Winston	4.35
Hickman Mills	4.35
Everton	4.20
Cooper County	3.85
Kansas City	3.75
Plattsburgh	3.75
Browning	3.75
Brookfield	3.75
Clayton	3.71
Bucklin	3.70
LaPlata	3.65
Miami	3.56
Maries County	3.55
Clark County	3.21
Windsor	3.15
Fredericktown	3.15
Vandalia	3.10
Crane	3.10
Richland	2.56

[1]The operating levy represents a tax of so many dollars per one hundred dollars of equalized assessed valuation. For example, Tri County collects $4.35 in taxes for every $100 of property value.

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TABLE 18

DISTRIBUTION OF OPERATING LEVIES, 1977-78
SAMPLE OF 100 MISSOURI DISTRICTS

OPERATING LEVY	NUMBER OF DISTRICTS	PERCENT OF DISTRICTS
Under 3.0	8	8
3.0 - 3.25	12	12
3.26 - 3.50	14	14
3.51 - 3.75	39	39
3.76 - 4.00	6	6
4.01 - 4.25	6	6
4.26 - 4.50	7	7
Above 4.50	8	8
Total	100	100

FIGURE 3

DISTRIBUTION OF OPERATING LEVIES, 1977-78
SAMPLE OF 100 MISSOURI DISTRICTS

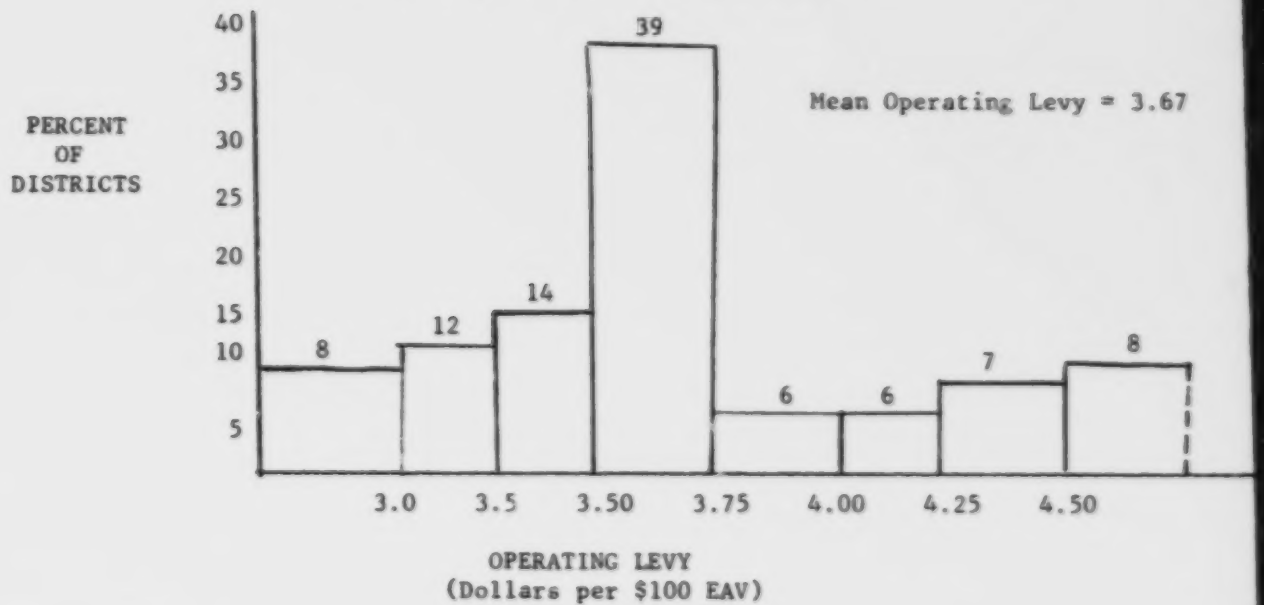

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Table 19 shows the distribution of measures of district wealth versus measures of educational spending. In looking at this table, it is difficult to determine if any definite patterns are emerging from the data. To help summarize the data so that it may be more easily analyzed, we have drawn upon a technique introduced earlier in the section on Differences in District Wealth. The data in Table 19 has been grouped by quintiles, each quintile representing four values. Quintiles, rather than deciles were chosen because of the smallness of the sample. For each of the categories within a quintile, the mean value has been computed. Table 20 shows the Summary of Measures of Ability to Pay versus Educational Expenditures and State Aid.

TABLE 19

COMPARISON DISTRICT PROPERTY WEALTH,
EXPENDITURES, TAX RATES AND STATE AID
SAMPLE OF 20 MISSOURI DISTRICTS

DISTRICT	EQUALIZED ASSESSED VALUATION PER ELIGIBLE PUPIL	CURRENT OPERATING EXPENDITURES PER ELIGIBLE PUPIL	OPERATING LEVY	STATE AID PER ELIGIBLE PUPIL
Clayton	$90,119	$3,442	3.71	$342
Kansas City	37,302	1,844	3.75	328
Cooper County	31,686	1,536	3.85	329
Tri County	29,074	1,646	4.35	342
Browning	28,286	1,254	3.75	329
Windsor	26,034	1,182	3.15	350
Winston	24,800	1,453	4.35	327
Clark County	24,021	1,166	3.21	394
Miami	23,299	1,311	3.56	465
Plattsburgh	23,228	1,286	3.75	366
Bucklin	22,292	1,423	3.70	473
LaPlata	21,925	1,215	3.65	367
Vandalia	20,750	1,113	3.10	421
Brookfield	19,897	1,197	3.75	464
Maries County	16,961	1,091	3.55	501
Everton	16,926	1,334	4.20	603
Hickman Mills	16,450	1,372	4.35	574
Fredericktown	16,444	1,130	3.15	497
Richland	12,821	1,014	2.56	600
Crane	12,237	1,060	3.10	645

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TABLE 20

SUMMARY MEASURES OF ABILITY TO PAY
VERSUS EDUCATIONAL EXPENDITURES AND
STATE AID
SAMPLE OF 20 MISSOURI DISTRICTS

QUINTILE	MEAN EQUALIZED ASSESSED VALUATION PER EP 8/	MEAN EXPENDITURES PER EP	MEAN OPERATING LEVY	MEAN STATE AID PER EP
5	$47,045	$2,117	3.92	335
4	25,785	1,264	3.62	350
3	22,686	1,309	3.67	418
2	18,634	1,184	3.65	497
1	14,488	1,144	3.29	579

8/ EP is an abbreviation for eligible pupil

Looking at this table, some patterns do begin to emerge. Across the 20 districts, per pupil expenditures generally increase as property wealth increases. This trend is somewhat interrupted in the fourth quintile where a higher per pupil expenditure might be expected. This interruption may be attributed to inconsistencies resulting from small sample data, or it may indicate that districts in the third and fourth quintile are behaving similarly. Actually, between the first through fourth quintile, there are no dramatic changes in educational spending between quintiles despite the trend toward increasing expenditures with increasing wealth. Notice that there is a very definite increase in both wealth and spending between the fourth and fifth districts.

Mean operating levies are fairly consistent across the quintiles. One might expect to see increasing levies as property wealth decreases. This would support the idea that poorer districts must often tax themselves at substantially higher rates than wealthy districts to raise a comparable level of educational revenues. This table indicates that the wealthy districts are levying substantially higher taxes to raise a high level of revenues. Districts in the average wealth range levy average tax rates and poorer districts levy below average tax rates.

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As expected for an equalizing state aid plan, state aid per pupil across districts varies inversely as property wealth does. This means as district wealth increases, state aid decreases recognizing the increased ability of districts to support services locally. The table shows a definite pattern with state aid to districts in the first quintile being 1.7 times that to districts in the fifth quintile.

Table 21 shows a similar comparison of Summary Measures of Ability to Pay Versus Educational Expenditures and State Aid for the larger sample of 100 districts. In this table, the data has been grouped by deciles (10 groups). Each decile represents 10 districts values for each category.

TABLE 21

SUMMARY MEASURES OF ABILITY TO PAY VERSUS
EDUCATIONAL EXPENDITURES AND STATE AID
SAMPLE OF 100 MISSOURI DISTRICTS

DECILE	MEAN EQUALIZED ASSESSED VALUATION PER EP	MEAN EXPENDITURES PER EP	MEAN OPERATING LEVY	MEAN STATE AID PER EP
10	$46,761	$1,882	3.72	$319
9	32,645	1,515	3.82	327
8	28,418	1,391	3.77	335
7	24,666	1,279	3.77	370
6	22,672	1,349	3.64	437
5	20,660	1,281	3.87	462
4	17,927	1,195	3.73	490
3	16,240	1,124	3.55	542
2	14,439	1,139	3.70	536
1	10,429	1,097	3.24	628

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Generally, across all the districts in the sample, mean per pupil expenditures increase as district property wealth increases. The mean per pupil expenditure in the highest decile is 1.7 times the mean per pupil expenditure in the lowest decile.

Earlier when operating levies were examined, the range in values between the highest and lowest district was found to be quite high. The mean operating levy was 3.67. After grouping the data from the 100 districts by deciles, mean operating levies across deciles tends to be constant. This indicates that across all levels of property wealth, there is a fairly even or similar distribution of operating levies. It also indicates that most districts are levying taxes for operating revenues at about the same rate. As indicated earlier, one might expect to find a pattern of increasing levies with decreasing wealth. The fact that operating levies are fairly constant despite increasing or decreasing property wealth still supports the concept that poorer districts must provide greater local effort relative to ability to pay to generate a reasonable level of educational spending. Poorer districts must tax themselves at rates which represent considerable burden to themselves relative to wealthy districts to generate revenues comparable to those of wealthier districts.

Finally, looking at the table, state aid varies inversely as does property wealth, which means state aid is increasing as wealth is decreasing. This is to be expected from a state aid plan that is equalizing. State aid should be distributed in a manner such that poorer districts, with limited ability to pay for services, receive greater amounts of state aid. Districts in the first decile receive almost twice as much state aid as districts in the tenth decile.

A cautionary note, in looking at all the tables in this last section, some very basic analysis techniques have been employed. Some patterns have emerged which point to wide differences among districts in educational spending and wealth, and some casual relationships between these two variables. Before any definitive conclusions could be drawn, it would be necessary to analyze data from all the districts. While our sample of 100 districts is representative of the state, it is still relatively small compared to the total 557 school districts. Furthermore, before drawing any conclusions other more sophisticated techniques of analysis should be used to examine the data from different perspectives.

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APPENDIX A

ANSWERS TO EXERCISES

Exercises on Minimum Guarantee

1. District A

$$\text{Eligibility Count} = \frac{\text{ADM} + \text{ADA}}{2}$$

$$= \frac{1250 + 1220}{2}$$

$$= 1235$$

District B

$$\text{Eligibility Count} = \frac{1400 + 1360}{2}$$

$$= 1380$$

2. District A

$$\text{Minimum Guarantee} = (\#\ \text{Elig. Pupils} \times .75\ \text{SEF}) + (\text{ADC} + \text{Orphans} \times .25 \times .75\ \text{SEF})$$

$$= (1235 \times 849) + (30 + 150) \times (.25 \times 849)$$

$$= 1{,}048{,}515 + (180 \times 212.25)$$

$$= 1{,}048{,}515 + 38{,}205$$

$$= \$1{,}086{,}720$$

$$\text{Minimum Guarantee Per Pupil} = \frac{1{,}086{,}720}{1{,}235}$$

$$= \$880$$

District B

$$\text{Minimum Guarantee} = (1380 \times 849) + (100 + 350) \times (.25 \times 849)$$

$$= 1{,}171{,}620 + (450 \times 212.25)$$

$$= 1{,}171{,}620 + 95{,}513$$

$$= \$1{,}267{,}133$$

$$\text{Minimum Guarantee Per Pupil} = \frac{1{,}267{,}133}{1{,}380}$$

$$= \$918$$

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Exercises on Required Local Contribution

1. District A

$$\text{District Income Factor} = \frac{1 + \frac{\text{District AGI Per Return}}{\text{State AGI Per Return}}}{2}$$

$$= \frac{1 + \frac{8550}{11.485}}{2}$$

$$= \frac{1 + .744}{2}$$

$$= 0.87$$

District B

$$\text{District Income Factor} = \frac{1 + \frac{6700}{11.485}}{2}$$

$$= \frac{1 + .583}{2}$$

$$= 0.79$$

2. District A

$$\text{Required Local Contribution} = \left(\frac{43,500,000}{100} \times 2.04 \times .87\right) + (.57 \times 2100) + (.57 \times 3400)$$

$$= (435,000 \times 1.77) + 1197 + 1938$$

$$= 769,950 + 1197 + 1938$$

$$= \$773,085$$

$$\text{Required Contribution Per Pupil} = \frac{773,085}{1235}$$

$$= \$626$$

District B

$$\text{Required Local Contribution} = \left(\frac{21,800,000}{100} \times 2.04 \times .79\right) + (.57 \times 1200) + (.57 \times 2200)$$

$$= (218,000 \times 1.61) + 684 + 1254$$

$$= 350,980 + 684 + 1254$$

$$= \$352,918$$

$$\text{Required Contribution Per Pupil} = \frac{325,918}{1380}$$

$$= \$256$$

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Exercises on Basic Apportionment

1. District A

Basic Apportionment = Minimum Guarantee - Required Contribution

= $1,086,720 - $773,085

= $313,635

Apportionment per pupil = $\frac{313,635}{1235}$

= $254

District B

Basic Apportionment = $1,267,133 - $352,918

= $914,215

Apportionment per pupil = $\frac{914,215}{1380}$

= $662

Exercises on GTB Add-On

1. District A

1) E.A.V. per pupil = $\frac{\text{E.A.V.}}{\text{\# Eligible Pupils}}$

= $\frac{43,500,000}{1,235}$

= $35,223

District A is not eligible for GTB Add-On aid because its local tax base is greater than the guaranteed tax base.

District B

1) E.A.V. per pupil = $\frac{21,800,000}{1,380}$

= $15,797

2) .57 PWL District Income Factor = (.57 PWL) X (District Income Factor)

= 2.04 X .79

= 1.61

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$$\text{GTB Add-On Per Pupil} = \left(\frac{\text{GTB} - \text{EAV/Pupil}}{100}\right) \times \left(\text{Eq. Op. Levy} - \text{.57 PWL District Income Factor}\right)$$

$$= \left(\frac{24{,}238 - 15{,}797}{100}\right) \times (3.45 - 1.61)$$

$$= 84.41 \times 1.84$$

$$= \$155.31$$

$$\text{Total GTB Add-On} = \text{GTB Add-On Per Pupil} \times \text{\# Eligible Pupils}$$

$$= \$155.31 \times 1380$$

$$= \$214{,}327.87$$

2. District A

1) E.A.V. per pupil $= \frac{28{,}000{,}000}{1{,}235}$

$= \$22{,}672$

2) .57 PWL District Income Factor $= 2.04 \times .87$

$= 1.77$

$$\text{GTB Add-On Per Pupil} = \left(\frac{\text{GTB} - \text{EAV/Pupil}}{100}\right) \times \left(\text{Eq. Op. Levy} - \text{.57 PWL District Income Factor}\right)$$

$$= \left(\frac{24{,}238 - 22{,}672}{100}\right) \times (3.35 - 1.77)$$

$$= 15.66 \times 1.58$$

$$= \$24.74$$

$$\text{Total GTB Add-On} = 24.74 \times 1{,}235$$

$$= \$30{,}553.90$$

Exercises on Total State Aid

1. District A

$$\text{Total State Aid} = \text{Foundation Aid} + \text{GTB Add-On}$$

$$= 313{,}635 + 0$$

$$= \$313{,}635$$

$$\text{Total State Aid Per Pupil} = \frac{313{,}635}{1{,}235}$$

$$= \$254$$

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District B

Total State Aid = 914,215 + 214,328

= $1,128,543

Total State Aid Per Pupil = $\frac{244,189}{1,235}$

= $279

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APPENDIX B

UPDATE ON THE MISSOURI FORMULA

The Missouri school finance formula is a fluid formula which is to say certain variables within the formula--the pupil weighted levy, the state expenditures, and the guaranteed tax base level--change annually as educational and economic factors change within the state and school districts. The figures for these variables fluctuate by definition thereby increasing or decreasing state aid to districts. The 1979-80 figures for the PWL, SEF, and GTB are footnoted in the text. Estimates of these same figures for 1980-81 follow:

.57 PWL	$1.54
.75 SEF	$1,171
GTB	$43,726

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